Listing of Claims

Please cancel claims 1-22, 31-37, and 39-45;

amend claims 23-25, 29, 30, and 38; and

add new claims 46-60, as follows:

1.-22. (Cancelled)

23. (Currently amended) A method for converting pyruvate and [[E4P]] erythrose 4-phosphate (E4P) to [[DAHP]] 3-deoxy-D-arabino-heptulosonate-7-phosphate (DAHP), the method comprising contacting an isolated or recombinant ~~KDPGal~~ 2-keto-3-deoxy-6-phosphogalactonate (KDPGal) aldolase with a solution containing pyruvate and E4P.

24. (Currently amended) The method of Claim 23~~, wherein said method~~ further ~~includes~~ comprising contacting said DAHP with a [[DHQ]] 3-dehydroquinate (DHQ) synthase, thereby forming DHQ.

25. (Currently amended) The method of Claim 24~~, wherein said method~~ further ~~includes~~ comprising contacting said DHQ with a DHQ dehydratase, thereby forming 3-dehydroshikimate.

26. (Previously presented) The method of Claim 23, wherein said method is performed within a recombinant cell.

27. (Original) The method of Claim 26, wherein said host cell was produced by transforming the cell with nucleic acid encoding at least one of a KDPGal aldolase or a DHQ synthase.

28. (Original) The method of Claim 26, wherein said recombinant cell contains at least one recombinant transketolase or at least one recombinant transaldolase.

29. (Currently amended) A method for converting pyruvate and erythrose 4-phosphate (E4P) to 3-deoxy-D-arabino-heptulosonate-7-phosphate (DAHP), comprising contacting ~~Use of~~ a recombinant ~~KDPGal~~ 2-keto-3-deoxy-6-phosphogalactonate (KDPGal) aldolase with pyruvate and E4P, ~~to produce DAHP from~~ wherein said contacting converts pyruvate and E4P to DAHP.

30. (Currently amended) The method [[use]] according to Claim [[19]] 29, ~~wherein said use~~ further ~~includes use of~~ comprising contacting DAHP with a recombinant DHQ synthase to produce DHQ from said DAHP.

31-37. (Cancelled)

38. (Currently amended) A process for preparing at least one of [[DAHP]] 3-deoxy-D-arabino-heptulosonate-7-phosphate (DAHP) or a derivative thereof, said process including the steps of:

1) providing

(A) ~~a supply of E4P~~ erythrose 4-phosphate (E4P) and pyruvate,

(B) a ~~KDPGal~~ 2-keto-3-deoxy-6-phosphogalactonate (KDPGal) aldolase, and optionally a [[DHQ]] 3-dehydroquinate (DHQ) synthase, and

(C) an aqueous medium,

2) contacting in said medium, said KDPGal aldolase with said E4P and said pyruvate under conditions suitable for ~~in which~~ said KDPGal aldolase [[can]] to catalyze the formation of [[DAHP]] 3-deoxy-D-arabino-heptulosonate-7-phosphate (DAHP) from the E4P and pyruvate, and optionally contacting said DAHP with said DHQ synthase under conditions suitable for ~~in which~~ said DHQ synthase [[can]] to catalyze the formation of 3-dehydroquinate from the DAHP;

3) optionally recovering at least one of DAHP, DHQ, [[DHS]] 3-dehydroshikimate (DHS), ~~or a further derivative thereof,~~ from said medium.

39-45. (Cancelled)

46. (New) The method of Claim 29, wherein the recombinant KDPGal aldolase is selected from a polypeptide comprising

an amino acid sequence having least 70% homology with SEQ ID NO:2, SEQ ID NO:4, or SEQ ID NO:6; and

at least one mutation selected from the group consisting of X10V, X28L, X28M, X42T, X85A, X154F, and X196I.

47. (New) The method of Claim 29, wherein said contacting step is performed in vivo in a recombinant cell.

48. (New) The method of Claim 29, further comprising obtaining recombinant KDPGal aldolase from a recombinant cell, and contacting the KDPGal aldolase with pyruvate and E4P in solution to convert pyruvate and E4P to DAHP.

49. (New) The method of Claim 29, wherein the recombinant KDPGal aldolase has a specific activity for DAHP formation in the range of 0.3 U/mg to 1.3 U/mg.

50. (New) The method of Claim 29 wherein the recombinant KDPGal aldolase comprises an amino acid sequence having between 190 to 215 residues and at least one mutation selected from the group consisting of X10V, X28L, X28M, X42T, X85A, X154F, and X196I,

wherein said recombinant KDPGal aldolase has higher specific activity for 3-deoxy-D-arabino-heptulosonate-7-phosphate (DAHP) formation than a KDPGal aldolase without said at least one mutation.

51. (New) The method of Claim 50, wherein said at least one mutation is selected from the group consisting of I10V, V28L, V28M, S42T, V85A, V154F and F196I.

52. (New) The method of Claim 50, wherein the recombinant KDPGal aldolase comprises an amino acid sequence having at least 70% homology with SEQ ID NO:2, SEQ ID NO:4, or SEQ ID NO:6.

53. (New) The method of Claim 50, wherein the recombinant KDPGal aldolase has no mutation that is X70L.

54. (New) The method of Claim 50, wherein the recombinant KDPGal aldolase comprises amino acid sequence at least 50% homologous to that of any of SEQ ID NO:2, SEQ ID NO:4, and SEQ ID NO:6, and said at least one mutation is a mutation thereto.

55. (New) The method of Claim 50, wherein the recombinant KDPGal aldolase comprises amino acid sequence having between 190 to 200 residues.

56. (New) The method of Claim 50, wherein the recombinant KDPGal aldolase comprises an amino acid sequence having between 200 to 210 residues.

57. (New) The method of Claim 50, wherein the recombinant KDPGal aldolase comprises an amino acid sequence having about 205 residues.

58. (New) The method of Claim 50, wherein the recombinant KDPGal aldolase comprises an amino acid sequence of a native bacterial KDPGal aldolase including said at least one mutation.

59. (New) The method of Claim 50, wherein said native bacterial KDPGal aldolase is native to a member of the proteobacteria.

60. (New) The method of Claim 50, wherein said native bacterial KDPGal aldolase is native to a member of any one of the genera *Agrobacterium, Bradyrhizobium, Brucella, Caulobacter, Escherichia, Klebsiella, Ralstonia, Salmonella*, and *Sinorhizobium.*